

2. ABSTRACT

2.1. OBJECTIVE:

To determine the applicability of various formulae for estimation of fetal weight in Sri Lankan population. Six commonly used formulae i.e. Shepard, Campbell, Hadlock I, II, III, and IV were evaluated in the study to determine best formula.

2.2. STUDY DESIGN

A descriptive cross-sectional study.

2.3. SETTINGS

Ward 9, Sri Jayewardenepura General Hospital, Kotte, Sri Lanka.

2.4. DURATION OF STUDY

The study was conducted from the month of October 2007 to December 2007, for a period of 3 months.

2.5. SUBJECTS

86 pregnant women above 28 weeks of period of gestation who delivered during the study period were included in the study.

2.6. INCLUSION CRITERIA

- 1) Singleton pregnancy at or more than 28 weeks.
- 2) Those who delivered within 48 hours of the USS examination by elective caesarian section or by induction of labor.

2.7. EXCLUSION CRITERIA

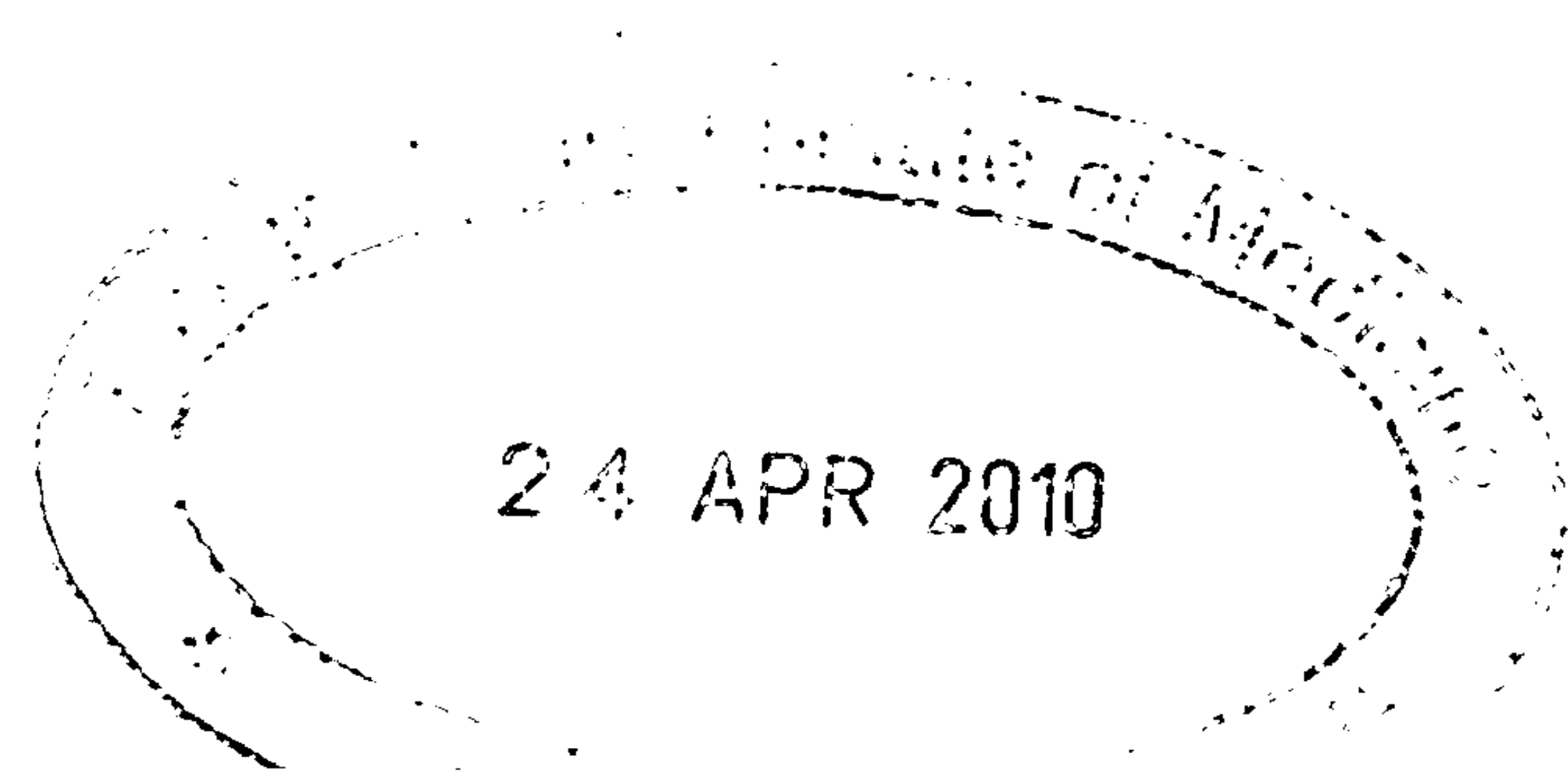
- 1) Fetuses with congenital anomalies like hydrocephalus, anencephaly and fetal limb anomalies affecting the fetal biometric measurements (BPD, HC, AC and FL).
- 2) The fetuses whose biometric measurements cannot be ascertained accurately due to reasons like deeply engaged head, very thick abdominal wall etc.
- 3) Mothers who have not given the consent for the USS after adequate counseling.
- 4) Newborns in whom anomalies detected following delivery or who are syndromic.

2.8. PROCEDURE

The fetal biometry (BPD, HC, AC and FL) was ultrasonically measured on the previous day of planned delivery and actual birth weights were taken within 30 minutes of delivery. Using the excel software, estimated fetal weight from each equation was calculated separately using basic biometric values for estimation of fetal weight.

2.9. RESULTS:

Statistical analysis was done using Karl Pierson correlation between actual birth weight and estimated birth weight by each formula, using ROC curve for each formula and assessing sensitivity, specificity for prediction of babies less than 2.5kg and more than 3.5kg. The highest positive correlation between the ABW and the EFW was seen in the Hadlock IV ($r = 0.836$) while Campbell had the lowest positive correlation with ABW ($r = 0.787$). According to the area under the curve for each ROC curve hadlock IV equation



has the highest (0.849) area under the curve compared to Campbell equation which has the lowest (0.612) area under the curve.

For fetuses less than 2.5 kg Hadlock IV has the highest sensitivity (75%) while Campbell has the lowest. All the equations have the high specificity which ranges from 93.6% to 100 %.

In fetuses more than 3.5 kg the Shepard has the highest sensitivity (90%) while hadlock IV has the lowest (40%). The specificity is highest (97.4%) in hadlock IV while shepard has the lowest (64%). Even though the hadlock IV is the best formula identified in our study to predict babies less than 2.5 kg out of whole population, it is not the best for prediction of a baby larger than 3.5kg (hadlock IV sensitivity 40%) compared to hadlock I (sensitivity 80 % and specificity 89.5%) which is the best formula to predict a baby more than 3.5 kg.

2.10. CONCLUSION:

It could be concluded that while all formulae have adequate accuracy for estimating fetal weight in the population tested, **HADLOCK IV** has the best accuracy.